Biological Control Work Plan for Calendar Year 2011

Cooperator:	Kansas Department of Agriculture, Plant Protection and Weed Control	
State:	Kansas	
Project Title:	Spotted Knapweed (*Centaurea stoebe* L.) biological control using the lesser knapweed flower weevil (*Larinus minutus)* and the knapweed root weevil (*Cyphocleonus achates)*	
Project Coordinator:	Laurinda Ramonda	
Agreement Number	11-8453-1227-CA	
Contact Information:	**Address:** P.O. Box 19282 Topeka, KS 66619	
	Phone: (785) 862-2180	**Fax:** (785) 862-2182
	Email Address: laurinda.ramonda@kda.ks.gov	

I. BACKGROUND INFORMATION

A. Provide a brief description of the issue

Spotted knapweed is an invasive biennial weed that invades cropland, pastures, fallow ground, and non-crop areas. Considering spotted knapweed is also a substantial problem in neighboring states, Kansas has listed spotted knapweed on its Invasive Weed Watch List. Considering that, in 2009 Kansas ranked in the United States number one in winter wheat production, number one in sorghum, 7th in corn for grain, 10th for soybeans, 3rd for sunflowers and 6th for forage, demonstrating Kansas' importance to US agriculture. Preventing the spread of invasive species, like spotted knapweed, becomes a priority so that Kansas agriculture does not suffer. Several infestations of spotted knapweed are known to exist in Kansas, but for the most part an extensive survey has not been completed. Understanding where spotted knapweed exists is crucial to controlling the spread of this invasive species. In addition, an integrated weed management approach combines the efforts of several weed management practices including chemical, biological, and mechanical. Combining the efforts of chemical, mechanical and biological control will result in better weed management then chemical alone. Subsequently, to keep the spotted knapweed population in Kansas in check, it has become important to pursue various control approaches, including biological control.

B. Indicate

Is this a new project? ☐ YES ☒ NO

Is this a continuation of a previously funded agreement? ☒ YES ☐ NO. If yes, have all progress reports been submitted? Explain.

The semi-annual and annual reports and financial reports have been submitted for the last 2 years of this survey.

II. OBJECTIVES, NEED FOR ASSISTANCE, BENEFITS EXPECTED

A. Specific Objectives of the Project (List if more than one)

- Survey known populations of spotted knapweed to determine the extent of the populations in Kansas.
- Monitor *Larinus minutus* and *Cyphocleonus achates* populations and spotted knapweed population after release.
- Perform a supplemental release of *Larinus minutus* and *Cyphocleonus achates* for biological control on spotted knapweed known infestation in Nemaha County.
- Establish an insectary for future *Larinus minutus* and *Cyphocleonus achates* releases in Kansas.

B. Justify how the funding will facilitate the cooperator in carrying a Biological Control Project that targets a pest of concern to APHIS

Spotted knapweed is a species of concern for APHIS and has historically been funded for biological control programs. In addition, spotted knapweed is listed on the Kansas' Invasive Weed Watch List because of its invasive characteristics and substantial problems it causes in neighboring states.

C. Indicate the economical or environmental impact of the pest (i.e., economic losses caused by the pest, mitigation costs, cost of the invasive species)

In 2009, 2.7 million acres of forage was harvested in Kansas with hay worth $664 million. Control costs can range from $9 to $40 per acre depending in which crop the spotted knapweed is present. Preventing the spread of invasive species, like spotted knapweed, becomes a priority so that Kansas agriculture does not suffer. Not only are there economical impacts of spotted knapweed, but environmental impacts too. Spotted knapweed can out-compete native vegetation creating a monoculture that does not favor wildlife.

D. Describe the expected benefits of conducting the activities in the work plan

Establishing a biological control organism will provide a longer term solution for the control of spotted knapweed. In addition, a biological control organism for spotted knapweed will aid in the implementation of an integrated weed management plan.

Combining the efforts of chemical, mechanical and biological control will result in better weed management then chemical alone.

III. RESULTS

A. What are the anticipated results and successes?

- The project includes a spotted knapweed survey of existing populations to expand our knowledge of the extent of the infestation.
- Reduce the populations of spotted knapweed.
- Establish a insectary for future releases in Kansas

B. Describe how results will:

1. Reduce mitigation costs of managing the pest

Reduce the control costs, which can range from $9 to $40 per acre depending in which crop the spotted knapweed is present. In addition, preventing the spread of spotted knapweed will reduce future economic impact.

2. Minimize negative impacts on non-targets

Larinus minutus and *Cyphocleonus achates* are approved by APHIS and has minimal non-target effect.

3. Establish biocontrol agents

Larinus minutus and *Cyphocleonus achates* will be released and then monitored over a few years in hopes of it providing an established population.

4. Reduce pest densities

Larinus minutus adults lay eggs on spotted knapweed flowers throughout the summer. The larva hatch, feeding on the developing seed. This reduces the production of new seed and thus after a few years, a reduction in the density of spotted knapweed. *Cyphocleonus achates* adults lay eggs at the base of the plant and the larva feed on the taproot of the plant. This feeding goes on through summer with adults emerging in mid-august. Working in combination, these insects have reduced spotted knapweed populations significantly in other states.

C. Select which of the following OUTPUTS will be achieved by the termination date: (Select YES, NO, or N/A for each output) * *N/A is non-applicable.*

• New rearing techniques	☐ YES	☐ NO	☒ N/A*
• Effective or improved rearing techniques	☐ YES	☐ NO	☒ N/A
• New potential BC species identified, studied, or collected	☐ YES	☐ NO	☒ N/A
• Effective or improve field site evaluation techniques	☒ YES	☐ NO	☐ N/A
• Effective or improve surveying techniques for pest or agent	☒ YES	☐ NO	☐ N/A
• Effective or improve monitoring techniques for pest or agent	☒ YES	☐ NO	☐ N/A
• Publications or educational material	☒ YES	☐ NO	☐ N/A
• Training	☐ YES	☒ NO	☐ N/A

• Other	☐ YES ☒ NO ☐ N/A
Explain here for Other:	

For OUTPUTS selected as YES, provide a description:

- Either success or failure of biological control release will help improve field site selection criteria.
- We will be surveying the spotted knapweed infested area in Nemaha County before and after biological control release.
- After the biological control release, we will monitor the site for *Larinus minutus* and *Cyphocleonus achates* plant injury symptoms and adults. In addition we will monitor the spotted knapweed density in the release area.
- Information on Spotted Knapweed is available on our website and on a Kansas pest alert.

IV. APPROACH

A. Plan of Action for the proposed objectives - Describe the work to be performed under this work plan. The narrative is to include any information or data that will be shared with APHIS.

Between the months of June through August, a survey of known spotted knapweed populations will take place. The timing of this survey will coincide with the flowering of spotted knapweed to make observing and identification less complicated. The survey will document the location and size of existing spotted knapweed populations. For example, the survey will focus on areas near known infestations of spotted knapweed and potential avenues of dispersal. Locally, the surveyor will look for spotted knapweed along road ditches, hay storage facilities, right-of-ways, etc. within a 5-mile radius of existing spotted knapweed populations. There will be 100 observations, with the focus being on the counties near established infestations including: Douglas, Franklin, Johnson, Miami, Shawnee and Nemaha. Information gathered will include: approximate area infested (sq. miles), location (GPS coordinates), cropping situation, and density (stems / sq. meter). Samples will be screened by:

Darin Banks
State Weed Specialist
Kansas Dept. of Agriculture
Plant Protection & Weed Control
P.O. Box 19282
Topeka, KS 66619-0282

In addition, during the month of July, we are planning a supplemental release of *Larinus minutus* and then in August, a release of *Cyphocleonus achates* in Nemaha County, Kansas. *Larinus minutus* and *Cyphocleonus achates* will be obtained from a commercial biological control company or if possible for the Colorado Department of Agriculture's Insectary. Before and after any release, the density of spotted knapweed will be measured using a quadrat. Separate

measurements will be taken for rosettes and bolted plants. Late summer/early fall, spotted knapweed densities will be measured with a quadrat and there will be a survey to monitor the survival of *Larinus minutus* and *Cyphocleonus achates* adults using a sweep net. Even with the fall density measurement, it is expected that the main effect of *Larinus minutus* and *Cyphocleonus achates* on spotted knapweed may not be known for a number of years. All data from the survey, release, and monitoring will be taken with a PDA/GPS an analyzed in ArcGIS. Information on Pest and biological control organism will be shared with APHIS by entering it into the NAPIS database.

B. Indicate which of the following activities will be performed:
(Select YES, NO, or N/A for each output) * *N/A is non-applicable.*

• Survey of pests	☒ YES	☐ NO	☐ N/A*
• Survey of BC agents	☒ YES	☐ NO	☐ N/A
• Environmental release of BC agents	☒ YES	☐ NO	☐ N/A
• BC agent collection – offshore	☐ YES	☐ NO	☒ N/A
• BC agent collection – field	☐ YES	☐ NO	☒ N/A
• BC agent distribution from lab or insectaries	☐ YES	☐ NO	☒ N/A
• Monitoring of pest	☒ YES	☐ NO	☐ N/A
• Monitoring of BC agents	☒ YES	☐ NO	☐ N/A
• Pre-release evaluation, development, or screenings of agent	☐ YES	☐ NO	☒ N/A
• Pre-release site selection and evaluation	☒ YES	☐ NO	☐ N/A
• Post-release site evaluation	☒ YES	☐ NO	☐ N/A
• Post-release evaluation of impacts on non-targets	☐ YES	☐ NO	☒ N/A
• Post-release evaluation of agent's efficacy	☒ YES	☐ NO	☐ N/A
• Rearing of BC agents	☐ YES	☐ NO	☒ N/A
• Mapping of pest or BC agent	☒ YES	☐ NO	☐ N/A
• Outreach or education	☒ YES	☐ NO	☐ N/A
• Training	☐ YES	☒ NO	☐ N/A
• Partnering or Networking	☒ YES	☐ NO	☐ N/A
• Techniques or methods development	☐ YES	☒ NO	☐ N/A
• Technology transfer	☐ YES	☒ NO	☐ N/A
• Other	☐ YES	☒ NO	☐ N/A

Explain here for Other:

For Activities selected as YES, provide a description:

- Survey for biological control agents from the previous years.
- Spotted knapweed will be surveyed in and around areas of existing populations.
- This will be a supplemental release of *Larinus minutus* and *Cyphocleonus achates* at the same location in Nemaha County, Kansas as 2010.
- After biological control agent release, spotted knapweed will be monitored.
- Before and after releases, there will be a survey to monitor the survival of *Larinus minutus* and *Cyphocleonus achates* adults using a sweep net.
- After release, the site will be monitored for spotted knapweed using a quadrat to sample plant density. Although, it is expected that the main effect of biological control will not be known for several years.
- Spotted knapweed populations and *Larinus minutus* and *Cyphocleonus achates* will be mapped and analyzed using ArcGIS
- Information on the release *Larinus minutus* and *Cyphocleonus achates* will be

published on the KDA website, in a pest alert and county locations of new finds.

- A Kansas Department of Agriculture pest alert will be printed for spotted knapweed.
- The Kansas Department of Agriculture will partner with the Nemaha County Weed Department in establishment of biological control site and the Colorado Department of Agriculture for biological control agent. Partnering will also occur with the Douglas County Weed Department, Franklin County Weed Department, Johnson County Weed Department, Miami County Weed Department

C. Contingencies - Include other approaches that will be considered if the work plan produces results sooner, later, or different than what you anticipate.

- Failure to establish a *Larinus minutus* and/or *Cyphocleonus achates* population will result in additional attempts to establish this biological control organism.
- Earlier establishment will result in a collectable population allowing us to move *Larinus minutus* and *Cyphocleonus achates* to other counties in Kansas in which spotted knapweed is established.

D. What is the quantitative projection of accomplishments to be achieved?

- Supplemental release of *Larinus minutus* and *Cyphocleonus achates* at the same location in Nemaha County, Kansas as 2010.
- Survey around known populations of spotted knapweed to determine the extent of the populations.
- Map and analyze data using ArcGIS.
- Submit data to NAPIS and state survey database.
- Add information to KDA webpage and share information with Kansas county weed directors.

1. By activity or function, what are the anticipated accomplishments by month, quarter, or other specified intervals?

Month	Activity
June-July	Survey for spotted knapweed as set forth in the approach.
July	Supplemental release *Larinus minutus* at the same location in Nemaha County, Kansas as 2010
August	Supplemental release *Cyphocleonus achates* at the same location in Nemaha County, Kansas as 2010

August - October	Monitor spotted knapweed and *Larinus minutus* and *Cyphocleonus achates*

2. What criteria will be used to evaluate the project?

- All data collected from the biological control project is entered into the state survey database and NAPIS database.
- Maps of the biological control project activities are produced to aid in decision making, control measures, and management of this pest.
- State CAPS and KDA meetings to keep updated on issues.

3. What methodology will be used to determine if identified needs are met?

- Review of the accomplishment reports and maps.
- State CAPS and KDA meetings to keep updated on issues.
- Periodic surveying of pest and biological control agent using quadrats to sample spotted knapweed densities and sweep nets to monitor *Larinus minutus* and *Cyphocleonus achates.*

4. What methodology will be used to determine if Results and benefits are achieved?

- Final map and data collected that was originally set forth in workplan.
- Infestation maps are completed and final report is sent to USDA.

V. RESOURCES

A. What resources are required to perform the work?

- KDA staff will perform release and monitoring activities.
- Temporary staff will be hired to perform the spotted knapweed survey.
- GPS unit to map, survey, and monitor release site.
- Purchase of *Larinus minutus* and *Cyphocleonus achates.*
- Rental or state vehicles are required travel to and from release site.
- Provided by Cooperator, office space with associated services and utilities, computers and other office equipment for the use of Cooperator personnel. These include digital camera, PDA with GPS unit, and computer with GIS and internet service. Computers will be used for entering survey data into the state survey database and NAPIS database.

1. What numbers and types of personnel will be needed, and what will they be doing?

- KDA staff will perform training of temporary staff, releasing and monitoring activities.
- Temporary staff will be hired to perform the spotted knapweed survey.

2. What equipment will be needed to perform the work? Include major items of equipment with a value of $5,000 or more.

- N/A

a. What equipment will be provided by the cooperator?

- N/A

b. What equipment will be provided by APHIS?

- N/A

c. What equipment will be purchased in whole or in part with APHIS funds?

- N/A

d. How will the equipment be used?

- N/A

e. What is the proposed method of disposition of the equipment upon termination of the agreement/project?

- N/A

3. Identify information technology equipment, e.g., computers, and their ancillary components. ***All information technology supplies (e.g., small items of equipment, connectivity through air cards or high speed internet access, GPS units, radios for emergency operations etc.) should be specifically identified*****.**

- Computers with internet access
- PDA with GPS
- Digital camera

4. What supplies will be needed to perform the work? Identify individual supplies with a cumulative value of $5,000 or more as a separate item.

- N/A

a. What supplies will be provided by the Cooperator?

- N/A

b. What supplies will be provided by APHIS?

- N/A

c. What supplies will be purchased in whole or in part with APHIS funds?

- N/A

d. How will the supplies be used?

- N/A

e. What is the proposed method of disposition of the supplies with a cumulative value over $5,000 upon termination of the agreement/project?

- N/A

5. What procurements will be made in support of the funded project and what is the method of procurement (e.g., lease, purchase)?
(Cooperator procurements shall be in accordance with OMB Circulars A-102 or A110, as applicable.)

- Purchase *Larinus minutus* and *Cyphocleonus achates* if needed.
- The Fiscal Department at the Kansas Department of Agriculture will handle most contracts.
- Most procurements will be made by purchase.

6. What are the travel needs for the project?

- Travel will be required to survey sites by use of a KDA or rental vehicle. The KDA Plant Protection and Weed Control Plant Program Manager is the approving official. Costs are included in the financial plan.
- The KDA Plant Protection and Weed Control Plant Program Manager is the approving official. Costs are included in the financial plan.

a. Is there any local travel to daily work sites? Who is the approving official? What are the methods of payment? Indicate rates and total costs in the Financial Plan.

- Travel will be required to biological control or survey sites by use of a KDA or rental vehicle.
- The KDA Plant Protection and Weed Control Plant Program Manager is the approving official. Costs are included in the financial plan.
- The Fiscal Department at the Kansas Department of Agriculture will handle most contracts.
- Most procurements will be made by purchase.

b. What extended or overnight travel will be performed (number of trips, their purpose, and approximate dates). Who is the approving official? What is the method of payment? Indicate rates and total cost in the Financial Plan.

- The KDA Plant Protection and Weed Control Plant Program Manager is the approving official. Costs are included in the financial plan.
- The Fiscal Department at the Kansas Department of Agriculture will handle payment.

7. Are there any other contributing parties who will be working on the project?

☒ YES ☐ NO
If YES, answer below:

a. List Participating Agency/Institution:

- KDA Plant Protection and Weed Control
- Nemaha County Weed Department
- Douglas County Weed Department
- Franklin County Weed Department
- Johnson County Weed Department
- Miami County Weed Department
- Shawnee County Weed Department

b. List all who will work on the project:

- KDA – state weed specialist and seasonal/temporary employee
- Nemaha County Weed Department – weed director
- Douglas County Weed Department – weed director
- Franklin County Weed Department – weed director
- Johnson County Weed Department – weed director
- Miami County Weed Department – weed director
- Shawnee County Weed Department – weed director

c. Describe the nature of their effort:

- KDA will perform the site selection, biological control agent release, and surveying for spotted knapweed and *Larinus minutus* and *Cyphocleonus achates* surveying and monitoring.
- Nemaha County Weed Department will help coordinate release site.
- Nemaha, Douglas, Franklin, Johnson, Miami and Shawnee County Weed Departments will help coordinate survey.

d. Contribution:

- KDA will perform the site selection, biological control agent release, and surveying for spotted knapweed and *Larinus minutus* and *Cyphocleonus achates* surveying and monitoring.
- Nemaha County Weed Department will help coordinate release site and survey activities.
- Douglas County will help coordinate survey activities.
- Franklin County will help coordinate survey activities.
- Johnson County will help coordinate survey activities.
- Miami County will help coordinate survey activities.
- Shawnee County will help coordinate survey activities.

VI. GEOGRAPHIC LOCATION OF PROJECT

A. Is the project statewide or in specific counties, townships, and/or national or state parks? (List all that apply)

This will be the third year of a three year plan, to release biological controls and survey

for spotted knapweed and to establish *Larinus minutus* and *Cyphocleonus achates.* The original 2009 release site is located in Nemaha County, Kansas, approximately 6 miles southeast of the town of Centralia. Nemaha County is located in northeast Kansas against the Nebraska border. The GPS coordinates of the release site are 39.667243, -96.098487. The survey of existing populations of spotted knapweed will occur in Douglas, Franklin, Johnson, Miami and Nemaha counties.

B. What type of terrain (e.g., cropland, rangeland, woodland) will be involved in the project?

The release site contains cropland and rangeland.

C. Are there any unusual features which may have an impact on the project or activity such as rivers, lakes, wild life sanctuaries, commercial beekeepers etc? (list all that apply)

None.

D. Are there tribal lands in proximity to the project area that may be impacted, positively or negatively, by the project?

The Pottawatomie Indian Reservation is located in Jackson County and the Kickapoo Tribe in Kansas is located in Brown County.

VII. DATA COLLECTION AND MAINTENANCE

A. What type of data will be collected and how will it be maintained?

All survey data from cooperative agreements involving pest surveys will be entered by the State Survey Coordinator or KDA staff into the NAPIS database using approved protocol. Data for the release of *Ceutorhynchus litura* will be put into NAPIS.

Data entry guidance appears below.

- First record for the State and/or County will be entered within 48 hours of confirmation of identification by a qualified identifier.
- All records are to be entered into the NAPIS database by December 31 of the year of survey so these data can be included in the yearly Plant Board Report.
- When possible, enter data as it becomes available and do not wait until the end of the year.
- Survey data should be collected with GPS technology (WGS84 datum is the standard)..

B. Address timelines for collection, recording, and reporting of data.

- Complete, accurate and timely pest survey data will be entered into NAPIS using approved protocol in July and August after release.
- New positive finds will be entered into NAPIS within 48 hours of confirmation.
- Annual Report will be submitted by March 2012.

C. How will APHIS be provided access to the data?

- Data is available through NAPIS access.
- Data is available through KDA.

D. Identify if the data collected relate to the following measures.

* ***N/A is non-applicable.***

• The number of BC species that become established and sustainable	☒ YES	☐ NO	☐ N/A*
• The number of BC programs that are developed, implemented, or transferred to States or others	☒ YES	☐ NO	☐ N/A
• Total number of sites that are managing targeted pests using biocontrol	☒ YES	☐ NO	☐ N/A
• Total number of new agents identified, studied, or imported	☐ YES	☐ NO	☒ N/A
• Total number of pre-release and site evaluations, or surveyed	☐ YES	☒ NO	☐ N/A
• Total number of sites monitored	☒ YES	☐ NO	☐ N/A
• Successful development of rearing and release technology	☐ YES	☐ NO	☒ N/A
• Number of eligible sites with targeted pests participating in biocontrol	☒ YES	☐ NO	☐ N/A
• Number of targeted pests managed using biocontrol	☒ YES	☐ NO	☐ N/A
• Number of publications, presentations, databases, and educational material	☒ YES	☐ NO	☐ N/A
• Number of agent colonies or insectaries created	☒ YES	☐ NO	☐ N/A
• Time of monitoring released BC agents in the field	☒ YES	☐ NO	☐ N/A
• Cost operating rearing laboratories	☐ YES	☐ NO	☒ N/A
• Total number of BC individuals reared	☐ YES	☐ NO	☒ N/A
• Total number of BC individuals released	☒ YES	☐ NO	☐ N/A
• Cost of BC individual reared	☐ YES	☐ NO	☒ N/A
• Cost of BC individual released	☒ YES	☐ NO	☐ N/A

For data variables selected as YES, provide a description:

- *Larinus minutus* and *Cyphocleonus achates* will be the species that will be established and sustained.
- *Larinus minutus* and *Cyphocleonus achates* will be established as a insectary and transferred to other areas of Kansas.
- The insectary will be established in Nemaha County.
- Nemaha County will be the site where spotted knapweed is known to exist and where *Larinus minutus* and *Cyphocleonus achates* will be released for biocontrol.
- Nemaha County will be the location of pre-release and site evaluation. A survey will take place to identify new populations of spotted knapweed.
- Nemaha County will be the site monitored.
- Information on Spotted Knapweed in the state is published on our website and pest alert.
- Nemaha County will be the site with targeted pests participating in biocontrol.
- *Larinus minutus* and *Cyphocleonus achates* will be the agent colony established as a insectary in Nemaha County
- After release in the spring, *Larinus minutus* and *Cyphocleonus achates* will be monitored for in the field.
- The total number of *Larinus minutus* released will be 700. The total number of *Cyphocleonus achates* released will be 700.
- The cost of *Larinus minutus* and *Cyphocleonus achates* will be collected through the financial records.

E. All survey data from federal cooperative agreements involving pest surveys, will be entered into an APHIS, PPQ approved database. The State Plant Health Director, or his/her designee, is responsible for assuring data quality.

1. If using NAPIS database.

a. First record for the State and/or County will be entered within 48 hours of confirmation of identification by a qualified identifier.

All biological control data from cooperative agreements involving pest surveys will be entered by the State Survey Coordinator or KDA staff into the state survey database and NAPIS database.

b. All other required records, both positive and negative survey data, must be entered within two weeks of confirmation.

- Complete, accurate, and timely pest survey data will be entered into NAPIS using approved protocol.
- Survey data will be collected with GPS technology for internal pathway analyses. Survey maps will be developed from approved GIS mapping software.

VIII. Reporting instructions:

A. Submit all reports to the APHIS Authorized Department Officer's Designated Representative (ADODR). Reports include:

1. Narrative accomplishment reports in the frequency and time frame specified in the Notice of Award, Article 4.
2. Financial Status Reports, SF-269, in the frequency and time frame specified in the Notice of Award, Article 4.
3. Standard Reporting Form for Biological Control Cooperative Agreements

SIGNATURES

ROAR **Date** **ADODR** **Date**

Detailed Financial Plan

PROJECT: Spotted Knapweed (*Centaurea stoebe L.*) biological control using the lesser knapweed flower weevil (*Larinus minutus*) and the knapweed root weevil (*Cyphocleonus achates*)
COOPERATOR NAME: Kansas Department of Agriculture
AGREEMENT NUMBER: 11-8453-1227-CA
TIME PERIOD: January 1, 2011-December 31, 2011

Financial Plan must match the SF-424A, Section B, Budget Categories

ITEM	APHIS FUNDS	COOPERATOR FUNDS (Show even if zero)	TOTAL
PERSONNEL:			
KDA staff 90 hours @$25/hr	0	$2,240	$2,240
Subtotal	**0**	**$2,240**	**$2,240**
FRINGE BENEFITS:			
22% of salary for KDA staff	0	$493	$493
Subtotal	**0**	**$493**	**$493**
TRAVEL:			
Vehicle rental for 3 weeks @ $350/week**	$1,050	0	$1,050
Subtotal	**$1,050**	**0**	**$1,050**
EQUIPMENT:			
Subtotal	**0**	**0**	**0**
SUPPLIES:			
Biological Control Agent (*Larinus minutus*)	$630		$630
Biological Control Agent (*Cyphocleonus achates*)	$630		$630
Office supplies	$50	0	$50
Fuel 2,200 miles/15mpg x $3.50 per gallon**	$513	0	$513
Subtotal	**$1,823**	**0**	**$1,823**
CONTRACTUAL:			
Temp Employee, 80 hours @ $20.00 per hour	$1,600	0	$1,600
Printing for pest alert	$250	0	$250
Subtotal	**$1,850**	**0**	**$1,850**
OTHER:			

Subtotal	**0**	**0**	**0**
TOTAL DIRECT COSTS	**$4,723**	**$2,733**	**$7,456**
INDIRECT COSTS (21.80% on Total Direct Cost of salary and fringe benefits)*	**0**	**$596**	**$596**
TOTAL	**$4,723**	**$3,329**	**$8,052**
Cost Share Information	59%	41%	

*Note indirect cost rate will depend on each States Negotiated Cost Rate

** There is a shortage of state vehicles. We give the option of renting a vehicle or using personally owned vehicles. If renting we pay for the fuel and if a personal vehicle is used we pay mileage.